

Quiz (9)

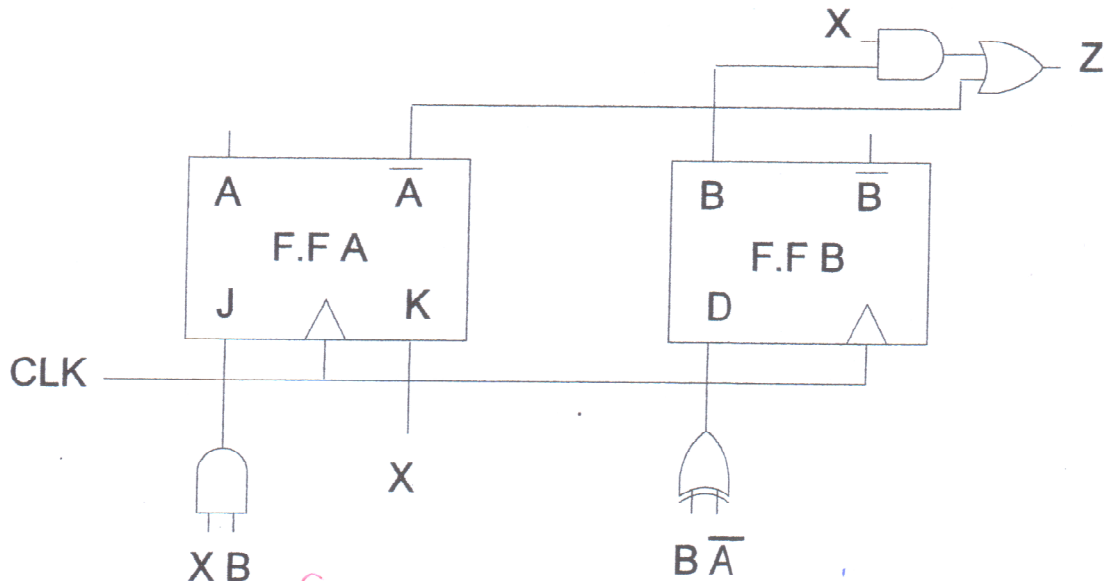
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A sequential network is made using two flip-flops A & B, having one input X and one output Z.

a. Is this a Moore or Mealy circuit, justify your answer? *Mealy, because $Z = f(x)$* (1)

b. Analyze the following sequential circuit by state diagram (show all steps and work necessary to the state diagram including the input and output equations, next-state equations for the flip flops, k-maps, state tables and finally state graph).

c. Starting from $S_3=11$, what is the output sequence when the input sequence is $X=011011$. Indicate the next states after each change in X.



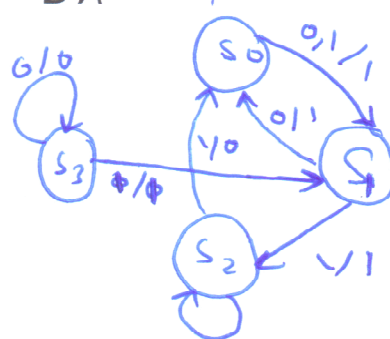
$$J_A = XB \quad K_A = X \quad (1)$$

$$A^+ = J_A A' + K_A A = XBA' + X'A \quad (1)$$

$$B^+ = D_B = A \oplus B = A'B' + AB \quad (1)$$

$$Z = XB + A' \quad (1)$$

AB	A^+B^+		Z	
	X=0	X=1	X=0	X=1
S_0 00	S_1 01	S_1 01	1	1
S_1 01	S_0 00	S_2 10	1	1
S_2 10	S_2 10	S_0 00	0	0
S_3 11	S_3 11	S_1 01	0	1



(S_3)						
S =	S_3	S_1	S_2	S_2	S_0	S_1
X =	0	1	1	0	1	1
Z =	0	1	1	0	0	1

(2)